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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,615	09/30/2003	Terry L. Schneider	7784-553/CPA	4204

65961 7590 04/11/2008
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EXAMINER	
CROUSE, BRETT ALAN	
ART UNIT	PAPER NUMBER
1794	
MAIL DATE	DELIVERY MODE
04/11/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/674,615	SCHNEIDER, TERRY L.	
	Examiner	Art Unit	
	Brett A. Crouse	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24-51* is/are rejected.

7)☒ Claim(s) *29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the amendment, filed 1 October 2007, which cancels claims 1-23 and adds new claims 24-51. Claims 24-51 are pending and under consideration.

Response to Amendment

2. The rejections of record prior to this office are withdrawn.

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection as set forth below.

Claim Objections

3. Claim 29 is objected to because of the following informalities:

There is a lack of spacing between the word "claim" and the number "24", in line 1 of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 25, 43, 47, 48 and 49 contain the trademark/trade name NITINOL. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See Ex parte Simpson, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the

goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe a nickel-titanium alloy and, accordingly, the identification/description is indefinite.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 24, 25, 26, 29, 30, 31, 32, 35, 37, 40, 43 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by (Terasaka, US 5,770,305) hereinafter known as Terasaka. As to claims 24, 25, 29, 32, 40, 43, 44:

Column 2, line 65 through column 3, line 9 with reference to figure 4, teach an anisotropic conductive film (ACF) comprising an epoxy resin. Conductive particles dispersed in the resin can be Titanium – Nickel alloy.

Column 1, lines 11-24, teach the positioning of the anisotropic conductive film prior to the application of pressure. This is equated with providing the film when the particles are unstressed and thus austenitic. The passage additionally teaches ACFs can be formed from thermoplastic resins.

The incorporation of shape memory particles in the resin of Terasaka is held to inherently improve a physical property of the resinous base material. The instant specification does not indicate any special process or mechanism for achieving the claimed property other than the incorporation of shape memory alloy particles. It is reasonable to assume such incorporation in the prior art would inherently yield the same property.

As to claims 30, 31, 35:

Column 2, line 65 through column 3, line 9 with reference to figure 4, further teaches that the alloy expands or contracts in response to stress and the alloy particles can be crushed due to stress. The process of expansion and contraction in response to stress is equated with resulting in austenitic and martensitic phases and mixtures thereof over the course of the phase transition. The various shapes encompassed by the base particles and stress induced deformations is held to encompass spheres, ovals, and cylinders.

As to claim 37:

Column 3, lines 17-18, teach that the particles have a mean particle size of 8μm.

As to claim 26:

Column 3, lines 33-38 with reference to figure 5, teach that the alloy content of the resin is 3 weight percent. The density of nickel-titanium alloy is about 6.5 g/cm^3 and the density of for example, phenolic resin is about 1.25 g/cm^3. This results in a volume percentage of about 0.58 percent.

8. Claims 24-31, 33, 35-38 and 40-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamakawa et al., WO 03/102071 hereinafter known as Yamakawa.

Yamakawa teaches:

As to claims 24, 25, 29-31, 33, 40-43, 46-49:

Paragraph [0005], teaches a composition comprising (A) a curable liquid polymer, (B) a shape-memory alloy filler, and (C) a thermoconductive filler.

Paragraph [0007], teaches that during the pre-curing, curing, or post-curing process it is necessary to raise the temperature above the transition point of the shape-memory alloy. This is held to teach that the particles can be combined with the resin either in the martensitic state and heated post-curing or in the austenitic state by pre-heating. The passage additionally teaches thermosetting resins are preferred.

As to claims 26-28, 35-38, 44, 45, 50, 51:

Paragraph [0008], teaches the shape-memory alloy can be nickel-titanium. The paragraph also teaches that the shape-memory alloy can be in the form of particles. The average particle diameter is in the range of 5 to 500 microns. This size range is held to encompass granules. The teaching of fibers is equated with cylinders and spheres due to the teaching in paragraph [0008] of the diameters and lengths of the fibers. Additionally, the average diameter teaching with regard to plates is held as encompassing an oval. The paragraph additionally teaches it is recommended to use component (B), (shape-memory alloy), in an amount of 0.01 to 30 weight percent, preferably 0.1 to 20 weight percent.

Paragraph [0007], teaches the amount of the resin (A) can be as low as 2 weight percent and that the amount of filler (C) can be as low as 30 weight percent. As such component (B), the shape memory alloy particles, can be present in an amount up to 68 weight percent.

The density of nickel-titanium alloy is about 6.5 g/cm^3 and the density of for example, phenolic resin is about 1.25 g/cm^3. This results in a range of volume percentages which overlaps the claim ranges of less than 1 to over 50 volume percent of the instant invention.

Paragraph [0010], teaches the composition can be used as an adhesive. The passage additionally teaches that the viscosity of the composition can be controlled over a wide range.

Paragraph [0022], teaches the composition functions as a protective layer.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 27, 28, 36, 38, 39, 41, 42 and 45-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Terasaka, US 5,770,305) hereinafter known as Terasaka, as applied to claims 24-26, 29-32, 35, 37, 40, 43 and 44 above, as evidenced by http://herkules.oulu.fi/isbn9514252217/html/x317.html, Fundamental characteristics of nickel-titanium shape memory alloy, Oulun Yliopisto.

The teachings of Terasaka as in the rejection above are relied upon.

As to claims 34, 46:

Terasaka does not teach the use of his resin within a mold.

It would have been obvious to one of ordinary skill in the art at the time of invention to formulate the resin viscosity for ease of application in order to conform to the gap between the electrodes or gap within a mold. It would have been obvious to one of ordinary skill in the art to expect that the effects of temperature and pressure can be controlled to cure the resin in a controlled space.

As to claims 36, 51:

The limitation of granules is held to be encompassed within the particle size distribution disclosure of a mean particle size of 8μm.

As to claims 27, 28, 38, 45:

Terasaka further does recite a volume percent for amount of alloy within the resinous material. Column 3, lines 33-38 with reference to figure 5 teach that the alloy content of the resin is 3 weight percent. The density of nickel-titanium alloy is about 6.5 g/cm^3 and the density of for example, phenolic resin is about 1.25 g/cm^3. This results in a volume percentage of about 0.58 percent. This teaching is held to suggest about 1 volume percent as required by claim 27. It would have been obvious to one of ordinary skill in the art to expect that larger percentages of nickel-titanium alloy, currently used to provide an electrical connection, would continue to provide an interconnected electrical pathway in the device of Terasaka due to the conductivity of the metal alloy and the increased density of the conductive particles.

As to claims 39, 47, 50:

The teachings of Terasaka in the above rejection under 35 USC 102, address the teachings of these limitations.

As to claims 41, 42, 48, 49:

Terasaka does not teach an austenitic or martensitic crystal structure of the alloy. It is noted that a nickel-titanium alloy is inherently either in an austenitic or martensitic crystal structure dependent on temperature and the relative percentages of the constituent metals, as evidenced by Fundamental characteristics of nickel-titanium shape memory alloy, and it is therefore obvious that it will exist as such when added to the resin.

11. Claims 32, 34 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamakawa et al., WO 03/102071, as applied to claims 24-27, 29-31, 33, 35-38 and 40-51 above, and further in view of Jenline Industries, http://www.jenline.com/.

Yamakawa teaches:

The teachings of Yamakawa as in the rejection above are relied upon.

As to claims 32, 34:

Yamakawa teaches:

Paragraph [0007], teaches resins other than thermosetting resins can be used as resinous component (A). The passage additionally teaches suitable materials for the resinous component including silicones.

Jenline Industries teaches:

The reference teaches thermoplastic silicones are useful in injection molding applications.

It would have been obvious to one of ordinary skill in the art to expect the silicone injection molding process of Jenline, useful in forming molded parts, to form a silicone part having high thermal conductivity when applied to the thermally conductive silicone resin composition doped with conductive nickel titanium particles of Yamakawa.

As to claim 39:

Yamakawa does not recite a particle size of less than 0.005microns for the shape memory alloy particles of component (B).

It would have been obvious to one of ordinary skill in the art to optimize the particle size of the composition of Yamakawa as part of the control of the rheological properties of the composition.

Double Patenting

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 25-30, 32, 33, 35, 36 and 40-51 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 5-8, 11, 12-15, 18-24 and 27-29 of copending Application No. 10/675,557. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending application claims an adhesive base material which is equated with a resinous base material as claimed in the instant invention. The subsequent dependent claims provide the compositional proportions and material structures as claimed in the instant invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

14. Claims 25-29, 32, 33, 35, 36, 40-48, 50 and 51 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7, 11-13 and 26-35 of copending Application No. 10/674,930. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending application claims a flowable base material which can be equated with the base material as claimed in the instant invention. The subsequent dependent claims provide the compositional proportions and material structures as claimed in the instant invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is (571)-272-6494. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel H. Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. A. C./
Examiner, Art Unit 1794

/Terrel Morris/
Supervisory Patent Examiner
Group Art Unit 1794